

CLAIMS

What is claimed and desired to be secured by Letters Patent is as follows:

1. A pleated stent assembly comprising:
 - a balloon; and
 - a tube having an original diameter,
 - wherein at least a portion of said balloon is contained within said tube,
 - wherein said tube and said balloon are co-pleated along longitudinal pleating lines to form a substantially cylindrical pleated tube/balloon assembly having a delivery width, and
 - wherein said delivery width of said assembly is less than said original diameter of said tube.
2. The device of claim 1, wherein said tube is formed from a material that undergoes sufficient plastic deformation along said pleating lines to substantially maintain said delivery width of said tube/balloon assembly.
3. The device of claim 1, further comprising a tubular sleeve substantially surrounding said tube/balloon assembly to substantially maintain said delivery width of said tube/balloon assembly.
4. The device of claim 3 wherein said tube is formed from a material having super-elastic properties.
5. The device of claim 1, wherein said tube is flexible along its longitudinal axis.
6. The device of claim 1, wherein the wall of said tube comprises at least one substantially solid annular body section.
7. The device of claim 6, wherein said body section is not radially expandable substantially beyond said original diameter upon inflation of said balloon.

8. The device of claim 1, wherein the wall of said tube comprises at least one annular anchor section, wherein said anchor section is radially expandable beyond said original diameter upon inflation of said balloon.
9. The device of claim 7, wherein the wall of said tube comprises at least one annular anchor section, wherein said anchor section is radially expandable beyond said original diameter upon inflation of said balloon.
10. The device of claim 1, wherein the wall of said tube is comprised of a pattern of interconnected solid areas defining open spaces therebetween.
11. The device of claim 10, wherein said pattern restricts radial expansion of said tube substantially beyond said original diameter over a portion of the length of said tube.
12. The device of claim 11, wherein said pattern comprises greater than about 60 percent solid area in the portion of said tube wherein radial expansion is restricted.
13. The device of claim 11, wherein said pattern allows radial expansion of said tube beyond said original diameter over at least a portion of the length of said tube.
14. The device of claim 13, wherein said pattern allows radial expansion up to about 130 % of said original diameter in the portion of said tube wherein radial expansion is allowed.
15. The device of claim 10, wherein said solid areas are comprised of longitudinal struts and interconnected circumferential struts.
16. The device of claim 15, wherein said wall comprises at least one annular anchor section, wherein the circumferential struts in said anchor section are radially expandable beyond said original diameter.

17. The device of claim 16, wherein said wall comprises at least one annular body section, wherein the circumferential struts in said body section of said wall are radially non-expandable substantially beyond said original diameter.
18. The device of claim 1, wherein said tube is a stent.
19. The device of claim 18, wherein said tube is formed from an electroformed metal.
20. The device of claim 19, wherein said metal is gold.
21. The device of claim 1, wherein said tube is formed from a biocompatible plastic.
22. A medical or veterinary stent comprising:
 - a tubular wall,
 - wherein said wall comprises at least one annular body section and at least one annular anchor section,
 - wherein said body section is substantially non-expandable radially, and
 - wherein said anchor section is expandable radially.
23. The stent of claim 22, wherein said anchor section is expandable up to about 130% of its original diameter.
24. The stent of claim 22, wherein said wall is comprised of a pattern of interconnected solid areas defining open spaces therebetween, and wherein the pattern of said body section of said wall comprises at least about 80% solid area and wherein the pattern of said anchor section of said wall comprises less than about 50 % solid area.
25. The stent of claim 24, wherein said solid areas of said wall are formed from an electroformed metal.
26. The stent of claim 25, wherein said metal is gold.
27. A method for delivering a pleated stent assembly comprising:

obtaining a pleated stent assembly comprising a stent longitudinally pleated onto and

with a balloon;

inserting said pleated stent assembly into a vessel of a subject;

advancing said pleated stent assembly to a desired position within the vessel;

increasing the pressure within the balloon to simultaneously unfold the stent and balloon

until the stent and balloon are fully unpleated;

decreasing the pressure within the balloon; and

removing the balloon from the stent and the vessel.

28. The method of claim 27, further comprising after said increasing step, the step of further increasing the pressure within the balloon to expand at least a portion of said stent until at least a portion of the exterior surface of said stent presses against the interior of said vessel.

29. The method of claim 28, wherein said stent comprises at least one non-expandable body section, and at least one expandable anchor section, wherein said further increasing step comprises expanding the anchor section of said stent until the exterior surface of said anchor section presses against the interior of said vessel.

30. The method of claim 29, wherein said vessel is an artery and said desired position is adjacent to an aneurysm.

31. A method for forming a pleated stent assembly comprising:

inserting at least a portion of a balloon within a tube having an original diameter; and

co-pleating said balloon and said tube along longitudinal pleating lines to form a

substantially cylindrical pleated tube/balloon assembly having a delivery width,

wherein said delivery width of said assembly is less than said original diameter of said

tube.